

ROUTER NETWORK PROTECTION USING MULTIPLE FACILITY INTERFACES

ABSTRACT OF THE DISCLOSURE

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A router line card is partitioned to separate the packet forwarding functions from physical port interfacing. For each packet forwarding card, at least one redundant port interface is provided. Identical input packets are transmitted via these redundant input port interfaces, one of which is eventually selected based on, for example, SONET standard criteria. If there is a failure, the router selects the interface path that is operating properly and rejects the path containing a failed element. Thus, the router decides locally how to correct the problem internally. Moreover, following an equipment failure the now offline failed interface path can be replaced, while the equipment remains in service using the duplicated interface path. The system can be restored to full duplex operation without affecting the existing traffic, providing for a hot replacement of a failed path. Because the interfaces are separate, a failed module can be renewed and replaced while the equipment is in service. If a failure occurs in an interface card between two peer routers, then packets flow between the two routers uninterrupted from exactly the same previous ports on one router to the same previous ports on the second router, using the same Internet protocol addresses as existed prior to the switching.

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